1,1-Dioctadecyl-3,3,3,3- tetramethylindocarbocyanine iodide

Cat: ID3750

Storage: Powder: -20℃, 2 years; Insolvent (mother liquid): -20℃, 6 months; -80℃, 1 year (protect from light)

Introduction

DiI, also known as DiIC18(3), the full name is 1,1'-dioctadecyl-3,3,3',3'tetra-methylindocarbocyanine perchlorate which is one of the most commonly used fluorescent probes for cell membranes, and exhibits an orange-red color fluorescence. DiI is a lipophilic membrane dye, which can gradually stain the entire cell membrane by lateral diffusion after entering the cell membrane. DiI is a lipophilic membrane dye, which can gradually stain the whole cell membrane by lateral diffusion after entering the cell membrane. DiI has a very weak fluorescence before entering the cell membrane, and only after entering the cell membrane can it be stimulated to emit a strong fluorescence. It is often used together with DiA for dual-color labeling of cell membranes.

DiI can be used extensively as a tracer or long-term tracer on cells or tissues, such as forward or reverse, live or fixed nerves, etc. DiI does not usually affect the viability of cells.

In addition to fluorescent labeling of cell membranes, DiI can be used for detecting cell fusion and adhesion, cell migration during development or transplantation, detecting lipid diffusion across cell membranes by FRAP (Fluorescence Recovery After Photobleaching), detecting cytotoxicity and labeling lipoproteins.

DiI staining can be followed by fixation with paraformaldehyde (no other reagents such as methanol may be used), but the process of permeabilization after staining is not recommended. In addition, plasma membrane staining can be performed well after fixed permeabilization (permeabilization with 0.1% TritonX-100 at room temperature).

Parameter

Ex/Em: 549/565 nm

CAS: 41085-99-8

Molecular Formula: $C_{59}H_{97}ClN_2O_4$

Molecular Weight: 933.87

Solubility: Soluble in DMSO ≥5mg/mL

Application: Cell membrane fluorescent dyes, neuronal prograde and retrograde tracing, cellular long-term tracing

Protocols (*only for reference*)

1. Preparation of staining solution

(1) Preparation of reservoir solution: The reservoir solution is prepared with DMSO at a concentration of 1~10 mM.

Note:

a) Unused storage solution is recommended to be stored at -20℃ to avoid repeated freezing

and thawing.

b) Moisture-absorbing DMSO has a significant effect on the solubility of the product, please use freshly opened DMSO.

(2) Working solution preparation: Dilute the reservoir solution with a suitable buffer (e.g., serum-free medium, HBSS or PBS) and prepare a working solution with a concentration of 1~10 μM.

Note: The final concentration of the working solution is recommended to be optimized for different cell lines and experimental systems. It is recommended to start with 10 times the recommended concentration to find the optimal concentration.

2. Staining of suspended cells

(1) Resuspend the cells by adding the appropriate volume of staining working solution to a density of 1×10^6/mL.

(2) Incubate the cells at 37℃ for 5~20 min, the optimal incubation time is different for different cells. The optimal incubation time varies from cell to cell. The 20 min can be used as the starting incubation time, after which the system can be optimized to obtain uniform labeling effect.

(3) At the end of incubation, centrifuge the cells at 1000~1500 rpm for 5 min, decant the supernatant, and resuspend the cells by slowly adding 37℃ preheated growth medium again.

(4) Repeat step (3) more than twice.

3. Staining of adherent cells

(1) Culture the adherent cells on sterile coverslips.

(2) Remove the coverslip from the medium and aspirate the excess culture solution, but keep the surface moist.

(3) Add 100 μL of dye working solution to one corner of the coverslip, and shake gently to make the dye cover all cells evenly.

(4) Incubate the cells at 37℃ for 5~20 min, the optimal incubation time is different for different cells. The optimal incubation time varies from cell to cell. The 20 min can be used as the starting incubation time, after which the system can be optimized to obtain uniform labeling effect.

(5) Absorb the dye working solution, wash the coverslip with culture solution 2~3 times, cover all the cells with pre-warmed medium each time, incubate for 5~10 min, and then absorb the medium. However, keep the surface moist.

4. Results testing

Samples can be assayed in culture media and can be analyzed by fluorescence microscope imaging or flow cytometry.

Note

1. Please centrifuge the product instantaneously to the bottom of the tube before use and subsequent experiments.

2. DiI staining of fixed cell or tissue samples is usually done with 4% paraformaldehyde formulated in PBS, and the use of other inappropriate fixatives will result in a higher fluorescence background.
3. All fluorescent dyes have quenching problems, please try to avoid light to slow down the fluorescence quenching.
4. For your safety and health, please wear lab coat and disposable gloves.
5. This product is for scientific research use only. Do not use in medicine, clinical diagnosis or treatment, food and cosmetics. Do not store in ordinary residential areas.

Related Literature

[1] Li Y, Wang J, Li Y, Luo J, Liu F, Chen T, Ji Y, Yang H, Wang Z, Zhao Y. Attenuating Uncontrolled Inflammation by Radical Trapping Chiral Polymer Micelles. ACS Nano. 2023 Jul 11;17(13):12127-12139. doi: 10.1021/acsnano.2c12356. Epub 2023 Jun 23. PMID: 37352508. (IF:17.1)

Note: For more literature, please visit the Solarbio official website.

Related Products

ID5550 DiA
ID5560 DiD
ID5580 DiOC6(3) iodide
ID5590 DiOC2(3) iodide
ID5600 Di-8-ANEPPS
IR1840 RH 237
IR1850 RH 421